

From: [Prigan, Sara](#)
To: [Eileen Harke](#)
Subject: Fwd: Briefing Matieral re EPA draft final rule: Tier 3 Motor Vehicle Emission and Fuel Standards
Date: Wednesday, September 28, 2016 11:11:34 AM
Attachments: [OMB Interagency Tier 3 FRM Analysis Results feb 2014.pptx](#)

Thank you,

*Sara Prigan
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U.S. Fish and Wildlife Service
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Telephone: 703-358-2508*

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From: **Prigan, Sara** <sara_prigan@fws.gov>
Date: Wed, Feb 5, 2014 at 12:57 PM
Subject: Fwd: Briefing Matieral re EPA draft final rule: Tier 3 Motor Vehicle Emission and Fuel Standards
To: Mark Shaffer <Mark_Shaffer@fws.gov>, Kurt Johnson <kurt_johnson@fws.gov>, Marilyn Brower <marilyn_brower@fws.gov>, Anissa Craghead <Anissa_Craghead@fws.gov>, Susan Wilkinson <susan_wilkinson@fws.gov>, Patrice Ashfield <patrice_ashfield@fws.gov>, Rick Sayers <rick_sayers@fws.gov>, Tina Campbell <tina_campbell@fws.gov>, Larry Bright <larry_bright@fws.gov>, Nancy Green <nancy_green@fws.gov>, Seth Mott <seth_mott@fws.gov>, Christy JohnsonHughes <christy_johnsonhughes@fws.gov>

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From: **Apgar, Megan** <megan_apgar@ios.doi.gov>
Date: Wed, Feb 5, 2014 at 12:40 PM
Subject: Briefing Matieral re EPA draft final rule: Tier 3 Motor Vehicle Emission and Fuel Standards
To: Interagency Review <interagency_review@ios.doi.gov>

Attached are the slides for the Tier 3 briefing at 2 pm today.

The call-in number (b) (6); passcode (b) (6)

Thanks,
Megan Apgar
Executive Secretariat and Regulatory Affairs
Office of the Secretary
Department of the Interior
Voice: (202) 208-4582

On Tue, Jan 28, 2014 at 11:05 AM, Apgar, Megan <megan_apgar@ios.doi.gov> wrote:

Hi all,

Attached are the briefing slides for this afternoon's call. The call-in information is:

(b) (6) passcode (b) (6)

Thanks,
Megan Apgar
Executive Secretariat and Regulatory Affairs
Office of the Secretary
Department of the Interior
Voice: (202) 208-4582

----- Forwarded message -----

From: **Apgar, Megan** <megan_apgar@ios.doi.gov>

Date: Mon, Jan 27, 2014 at 4:18 PM

Subject: For Comment by 2/6/14: EPA draft final rule: Tier 3 Motor Vehicle Emission and Fuel Standards

To: Interagency Review <interagency_review@ios.doi.gov>

Comments due to OES by 2/6/2014

Attached for your review under E.O. 12866/13563, please find EPA's draft final rule, Control of Air Pollution From Motor Vehicles: Tier 3 Motor Vehicle Emission and Fuel Standards (RIN 2060-AQ86).

I will provide the RIA for this rule in a separate email. EPA will provide two overarching briefings on the rule including: 1) program design briefing on Tuesday, January 28th at 3:30pm and 2) costs and benefits briefing on Wednesday, February 5th at 2pm. The call-in number for both briefings will be: (b) (6) and passcode: (b) (6). I will forward briefing materials as soon as they are available.

Upon completing your careful review, please use your discretion to limit circulation of this message to individuals in your bureau or office as appropriate. Please emphasize to those included on your distribution list that these documents are

internal deliberative and should not be shared or discussed outside of the Executive Branch. To maintain a close-hold on these documents, we suggest that the attachments only be shared with bureau/office staff upon their request after they have reviewed the provided summary. A negative reply is not necessary; if I do not hear back from you by the 2/6 deadline, I will assume that you have no comments.

SUMMARY: This action would establish more stringent vehicle emissions standards and reduce the sulfur content of gasoline as part of a systems approach to addressing the impacts of motor vehicles and fuels on air quality and public health. The rule would result in significant reductions in pollutants such as ozone, particulate matter, and air toxics across the country and help state and local agencies in their efforts to attain and maintain health-based National Ambient Air Quality Standards (NAAQS). These proposed vehicle standards are intended to harmonize with California's Low Emission Vehicle program, thus creating a federal vehicle emissions program that would allow automakers to sell the same vehicles in all 50 states. The vehicle standards would also coordinate with the light-duty vehicle greenhouse gas standards for model years 2017-2025, creating a nationwide alignment of vehicle programs for criteria pollutant and greenhouse gases. EPA estimated the annual cost of the rule in 2013 to be \$1.5 billion and the monetized benefits to be between \$6.7-18 billion (7% discount rate).

As a reminder, the attached materials are deliberative and pre-decisional and may not be shared or discussed with anyone outside of the Executive Branch. Feel free to share within your agency or department as appropriate. If you feel someone outside of your department should participate in this review, please let me know and I will forward to them. Please help us maintain the integrity of the interagency review process by respecting these process requirements.

Thanks,
Megan Apgar
Executive Secretariat and Regulatory Affairs
Office of the Secretary
Department of the Interior
Voice: (202) 208-4582



Tier 3 Final Rule Analysis Results

Briefing for Interagency Reviewers
February 5, 2014

Overview

- Changes to baseline
- Vehicle costs
- Fuel costs
- Emissions impacts
- Air quality impacts
- Benefits
- Schedule and next steps

Changes to Baseline since NPRM

- Accounted for LEV III in California and Section 177 states
 - Tier 3 sulfur control still applies to Section 177 states
 - No fuel changes modeled for California
 - Tier 3 vehicle leak standard provides emission reductions nationwide
 - This is the only Tier 3 emissions benefit in California
 - Affects both emissions and cost analysis
- Included LD GHG 2017 and HD GHG rules
 - Both rules are included in reference and control cases
 - Projected vehicle fleet is the 2017-2025 GHG fleet
 - Total fuel volumes in baseline reduced due to LD GHG 2017
- Updated renewable fuels volumes and blends
 - NPRM assumed full RFS ethanol volumes with E10 and E15
 - FRM analyses are based on AEO 2013, which assumes:
 - Renewable fuel volumes are much less than full RFS
 - Mix of E10, E15 and E85
- Using 2011 dollars (FRM) rather than 2010 dollars (NPRM)

Vehicle Cost Analysis Updates

- FRM analysis reflects LEV III, LD GHG 2017 and HD GHG
 - Accounts for LEV III in Section 177 states and California
 - NPRM only accounted for California
 - Uses 2017-2025 GHG projected fleet
 - Tier 3 final costs do not include research and some development costs associated with LEV III
- Vehicle cost analysis updates
 - Improved methodology used to project catalyst loading costs, based on comments received in the NPRM
 - Updated technology penetration rates for several technologies
 - Secondary air injection, optimized thermal management
 - Other specific changes in technology/hardware costs
 - Use of passive hydrocarbon adsorbers instead of active
 - Improvements to evap hardware costs based on other technology changes
 - Addition of engine calibration costs based on other technology changes
 - Used most recent (MY2013) certification emission test data

Vehicle Costs – Tier 3 FRM

\$/Vehicle

Exhaust & Evaporative Controls
2011 dollars

Model Year	All Tier 3 Vehicles
2017	\$28
2018	\$58
2019	\$61
2020	\$65
2021	\$68
2022	\$71
2023	\$71
2024	\$71
2025	\$72

\$/Year in 2030

All Vehicle Program Costs*
2011 dollars

Calendar Year	\$Millions	Change from NPRM
2030	\$761	-63%

* Exhaust, evaporative, operating, facilities

63% lower costs in 2030 due to:

- Lower \$/vehicle (\$130 down to \$72)
- Smaller fleet—FRM excludes California & other LEV III states (36% of fleet) while NPRM excluded California only.

Refinery Modeling and Fuel Cost Updates

- FRM analysis reflects AEO 2013 fuel supply, including reduced fuel volumes due to LD GHG 2017 and changes to renewable fuels
- Refinery-by-refinery model also updated for the FRM
 - Used new data for refinery throughput volumes that provides greater certainty on refinery operations
 - Calibrated refinery FCC volumes based on FCC undercutting, propylene and aromatics sales, etc.
 - Adjusted to actual starting sulfur level by refinery (NPRM assumed 30 ppm)
 - Obtained additional vendor data
 - Applied less conservative criteria treating other streams (e.g., butane, LSR)
 - Increased capital cost offsite and contingency factors

Refinery Modeling and Fuel Cost Updates

- FRM projects nationwide trading instead of just intracompany, as assumed in the NPRM
 - Majority of credits are being traded between companies, not within

2012 Sulfur Credit Transactions							
Vintage of Credit	Total	2012	2011	2010	2009	2008	2007
Billion Credits	590	13	60	56	39	189	233
% of All 2012 Credit Transactions		2	10	9	7	32	39
% Intercompany	56	28	59	31	16	60	66

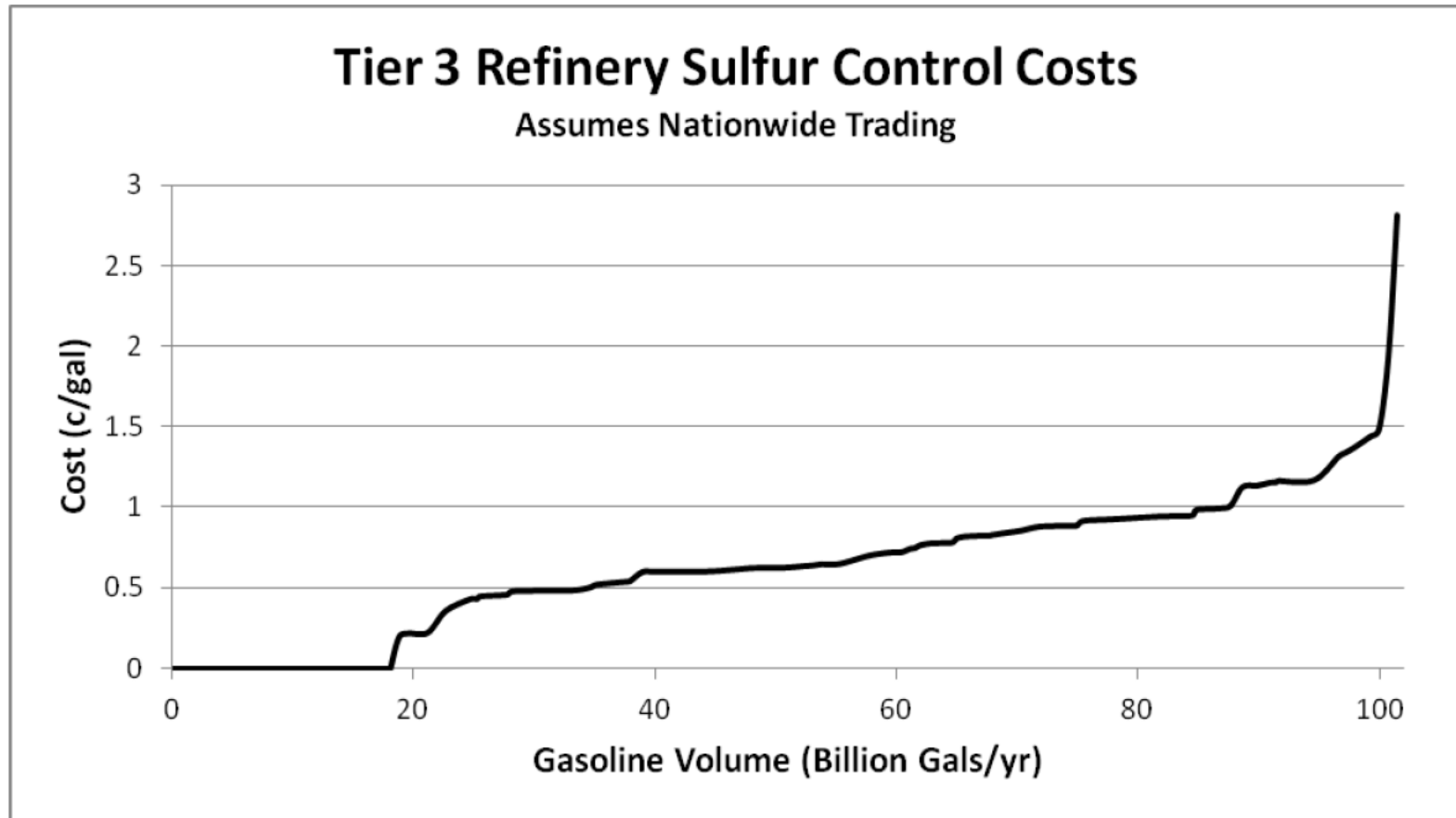
Tier 3 Fuel Costs

	NPRM	FRM	%Change
Cost (c/gal)	0.89	0.65	-27%
2030 Annual Cost \$B	1.320	0.696	-47%*
Capital Cost \$B	2.203	2.025	-8%
# Grassroots Units	16	1	
# Revamps	67	62	

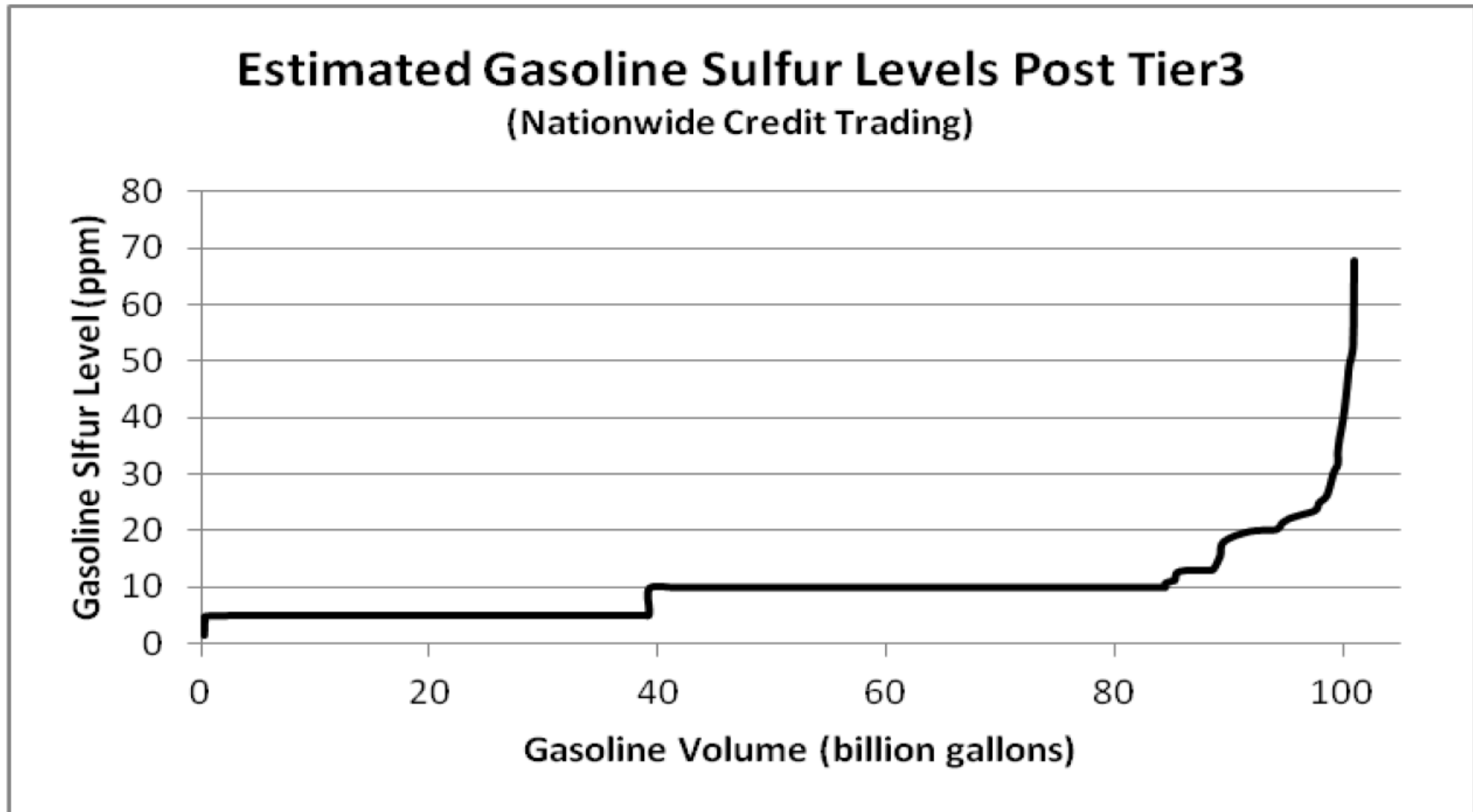
* Also reflects lower fuel consumption for FRM (AEO2013) vs NPRM (AEO2011)

Changes in the Refinery Cost Model	Impact on Cost
National credit trading instead of intracompany credit trading	↓ ↓ ↓
Removed Butane Treating	↓
Reduced LSR Hydrotreating	↓
Added propylene production and FCC naphtha downgrading	↓
Increased capital cost offsite factor and contingency factor	↑ ↑ ↑
Various other updates and tweaks due to comments/peer review	↓ ↑

Tier 3 Fuel Costs



Tier 3 Sulfur Levels



Emissions/AQ/Benefits Analysis Updates

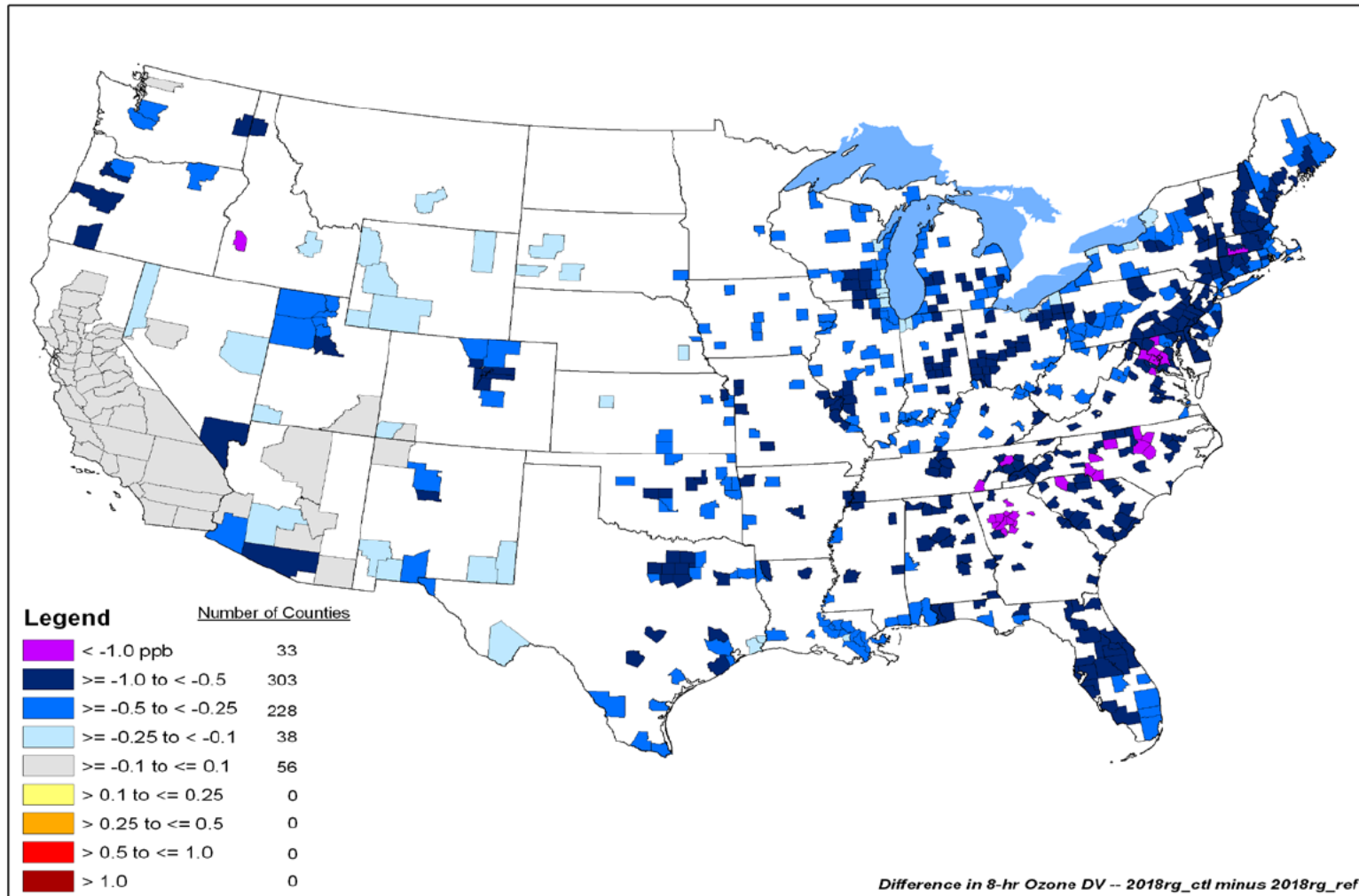
- LEV III, LD GHG 2017 and HD GHG included in both reference and control cases
- First analysis year is 2018
- Improved modeling of onroad emissions with MOVES
- Improved representation of local fuel properties and upstream impacts
- New air quality modeling platform
 - 2007 instead of 2005 base year
- CMAQ updates: CMAQ v 5.0.1 (NPRM used v 4.7.1)
- Benefits analysis updated to be consistent with final PM NAAQS methodology

Tier 3 Impacts

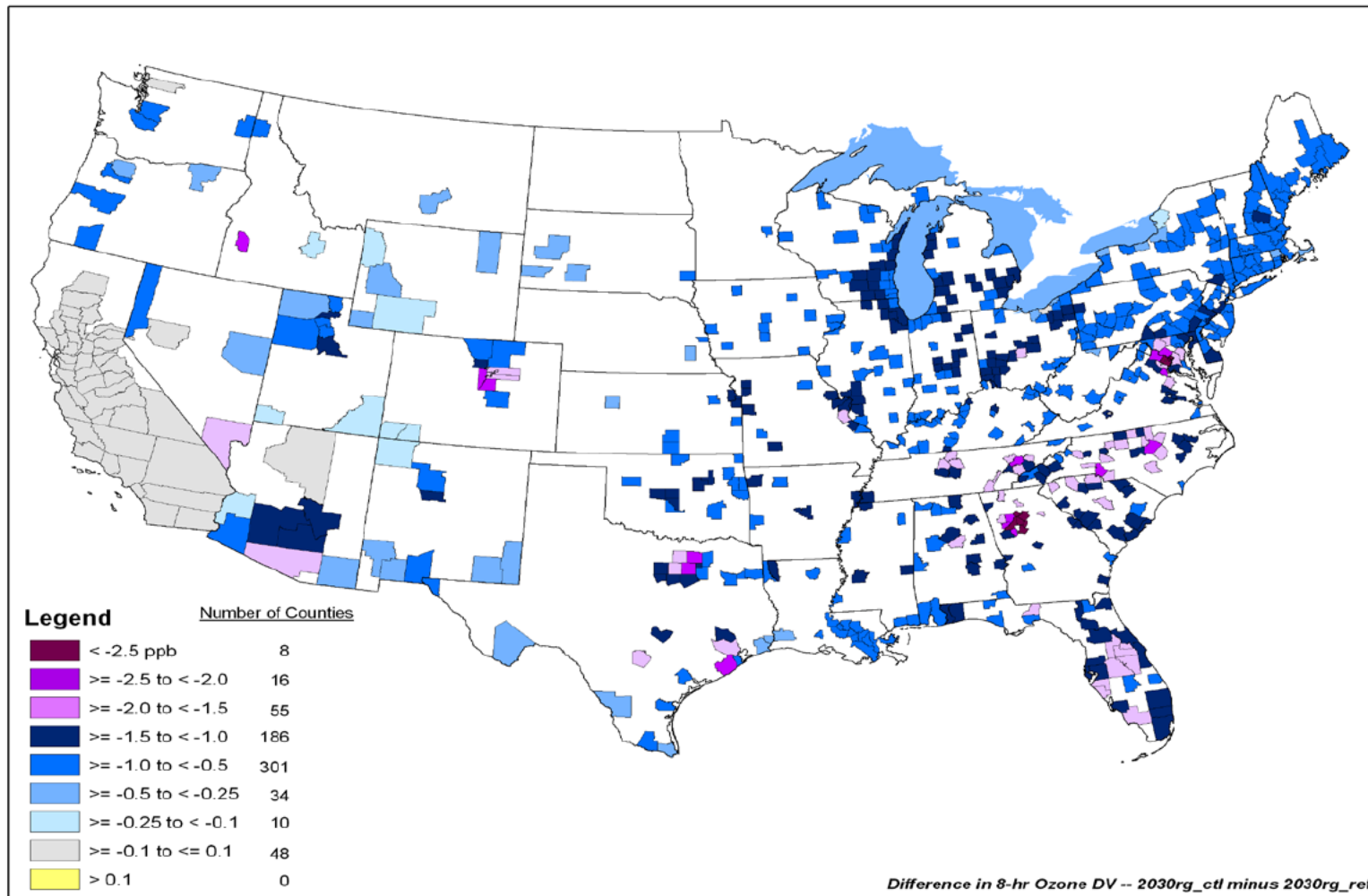
	2018		2030	
	Reduction (US Tons)	% reduction in onroad inventory	Reduction (US Tons)	% reduction in onroad inventory
NO _x	-264,000	-10%	-329,000	-25%
VOC	-47,500	-3%	-168,000	-16%
PM _{2.5}	-130	-0.1%	-7,890	-16%
Benzene	-1,920	-6%	-4,760	-26%

- Lower NO_x, VOC, and PM_{2.5} emissions lead to
 - Moderate to large ozone decreases across the country
 - Small to moderate PM decreases across the country

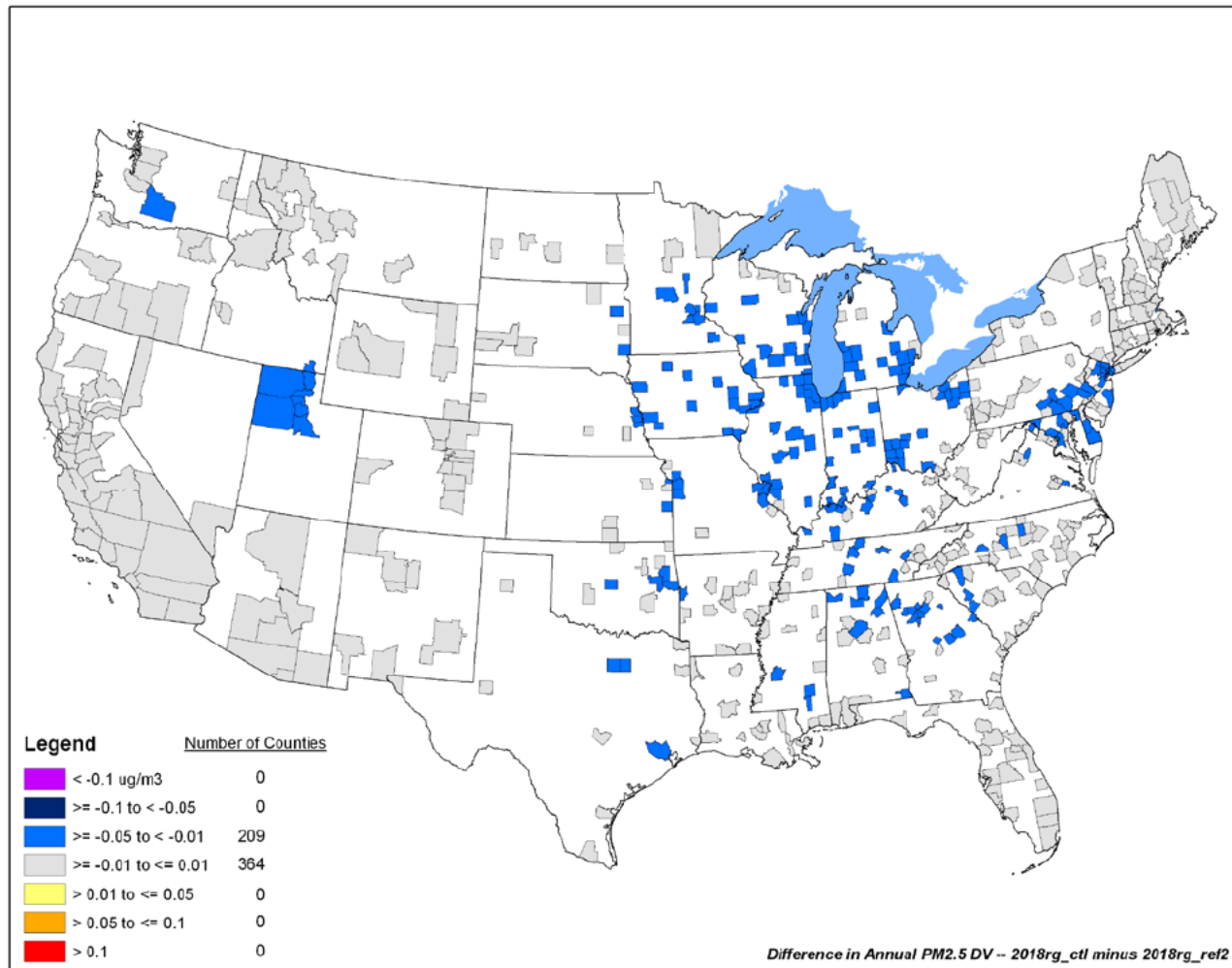
AQ Impacts in 2018 - Ozone



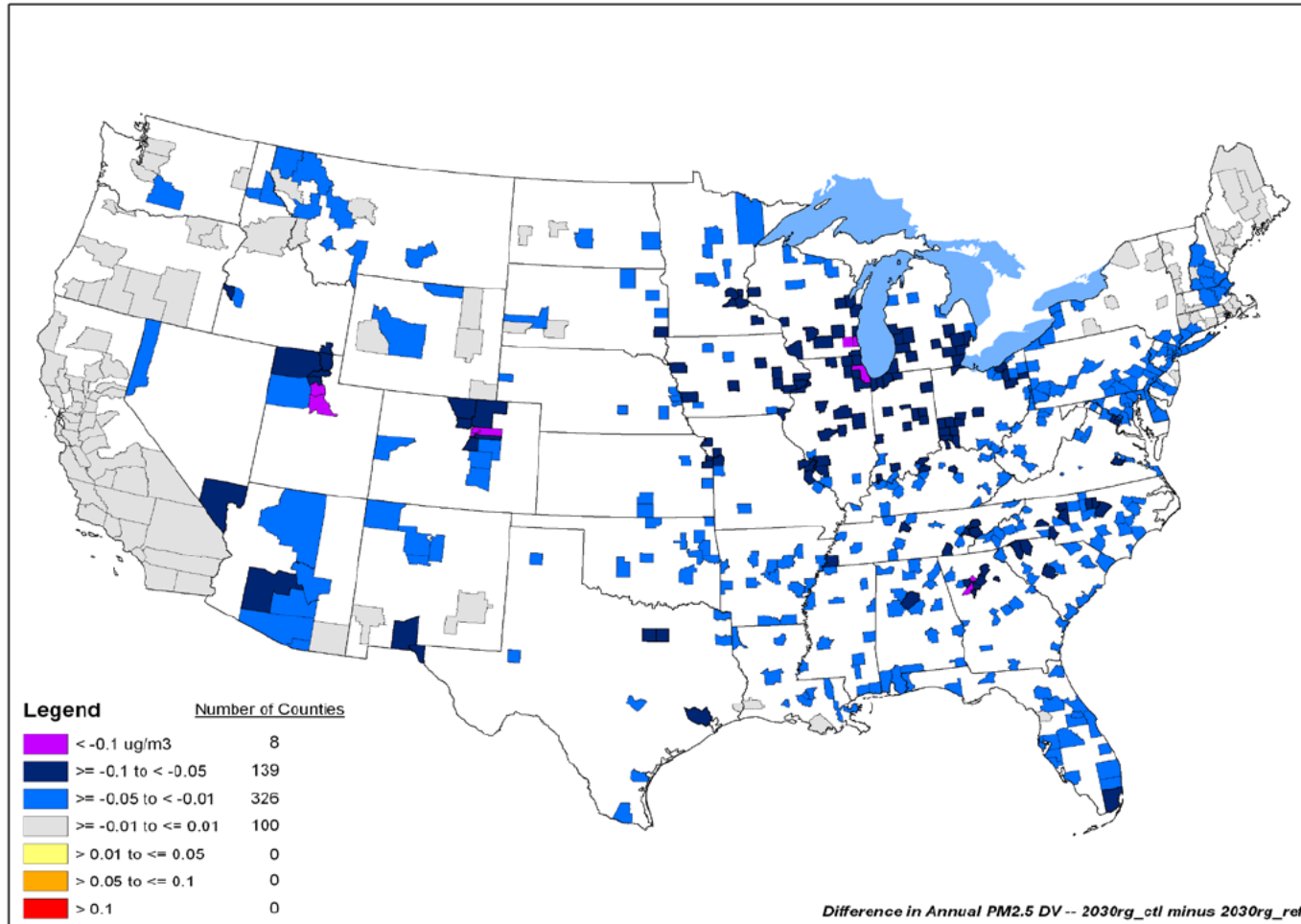
AQ Impacts in 2030 - Ozone



AQ Impacts in 2018 – Annual PM_{2.5}



AQ Impacts in 2030 – Annual PM_{2.5}



Benefits in 2030

- Ozone and PM-related Premature Mortality Avoided:
 - PM: 660 to 1,500 avoided (Krewski et al., 2009 & Lepeule et al., 2012)
 - Ozone: 110 to 500 avoided (based on range of six studies)
 - Total: 770 to 2,000 premature deaths
- Total Monetized Benefits
 - **\$7.4 to \$19 Billion** (3% DR); **\$6.7 to \$18 Billion** (7% DR)
- Total Costs
 - **\$1.5 Billion**
- Benefit-to-Cost Ratio
 - **4.5 to 12.7**

Benefits in 2018

- Impacts in 2018 primarily due to the effects of sulfur on the existing (pre-Tier 3) fleet
- Ozone and PM-related Premature Mortality Avoided:
 - PM: 180 to 400 avoided (Krewski et al., 2009 & Lepeule et al., 2012)
 - Ozone: 45 to 210 avoided (based on range of six studies)
 - Total: 225 to 610 premature deaths
- Total Monetized Benefits
 - **\$2.1 to \$5.6 Billion** (3% DR); **\$1.9 to \$5.3 Billion** (7% DR)
- Total Costs
 - **\$1.4 Billion**

Next Steps

- EPA requesting 30-day OMB review
 - Clearance Feb. 24